CLAIMS

What is claimed is:

1. A computer-implemented method of conducting a consecutive betting process for investors, the computer having a betting exchange unit for performing the following steps:

a) identifying an uncertain event having potential outcomes O_1, ... O_m, where $m \geq 2$;

b) initializing a first betting cycle;

c) receiving bets B_1, ..., B_m from the investors for each of the potential outcomes O_1, ... O_m during the first betting cycle to accumulate an initial bet total B_{tot};

d) issuing equal numbers OS(1), ... OS(m) of outcome shares such that OS(1)=...=OS(m), the outcome shares corresponding to the potential outcomes O_1, ... O_m;

e) assigning a share value SV to each of the outcome shares;

e) assigning quote values Q_1, ..., Q_m to each of the outcome shares such that $Q_1=(SV*B_1)/B_{tot}$, ..., $Q_m=(SV*B_m)/B_{tot}$; and

f) distributing the outcome shares to the investors.

2. The method of claim 1, further comprising the steps of:

g) monitoring an actual outcome OA of the future event; and

h) selecting from among the outcome shares winning shares WS corresponding to the actual outcome OA and determining a number of winning shares NWS.

3. The method of claim 2, wherein the number of winning shares NWS is selected such that $NWS*SV=B_{tot}$.

5. The method of claim 2, wherein the step of monitoring the actual outcome OA is performed by a data acquisition unit.

6. The method of claim 1, wherein the investors comprise real investors and artificial investors.

7. The method of claim 6, wherein at least one artificial betting entity places a minimum initial bet B_{min} on any of the potential outcomes O_1, ..., O_m for which corresponding initial bets B_1, ..., B_m are zero.

8. The method of claim 6, wherein the real investors are connected to the betting exchange unit by a communication network.

9. The method of claim 1, the method further comprising the following steps:

i) initializing a subsequent betting cycle;

j) receiving amounts of money IM(1),...IM(m) corresponding to subsequent bets B_1, ..., B_m from the investors on each of the potential outcomes O_1, ..., O_m during the subsequent betting cycle;

k) receiving numbers IS(1), ..., IS(m) of incoming shares in outcomes O_I, ... O_m, from the investors during the subsequent betting cycle; and

l) re-assigning the quote values Q_1, ..., Q_m to preserve an equal number of outstanding shares in outcomes O_I, ... O_m such that OS(1)-IS(1)=...=OS(m)-IS(m), wherein OS(i) are numbers of outcome shares for outcomes O_1...O_m newly issued during the subsequent betting cycle.

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10. The method of claim 9, wherein the numbers of incoming outcome shares and newly issued outcome shares exchanged are in accordance with the reassigned quote values Q_1, ..., Q_m.

11. The method of claim 9, further comprising the steps of:

m) monitoring an actual outcome OA of the future event; and

n) selecting from among the outcome shares winning shares WS corresponding to the actual outcome OA and assigning a normalized share value SV to each of the winning shares WS.

12. The method of claim 11, wherein the normalized share value SV is selected such that $NWS*SV=B_{tot}$, where NWS is the number of winning shares.

13. The method of claim 11 wherein said normalized share value SV is equal to a unit of currency.

14. The method of claim 9, further comprising:

g) determining amounts of outgoing money OM(1), ..., OM(m) for each kind of outcome share, wherein each amount of outgoing money OM(i) is determined by $OM(i)=\frac{IM(i)\cdot IS(i)}{OS(i)}$.

15. The method of claim 14, wherein the revised quotes $Q_1 \ldots Q_m$ are determined by $Q_i=\frac{IM(i)}{OS(i)}=\frac{OM(i)}{IS(i)}$.

16. The method of claim 9 wherein step d) includes solving a polynomial of having m+1 roots.

17. A system for conducting a consecutive betting process for investors placing bets B_1, ..., B_m on potential outcomes O_1, ..., O_m of a future event, where $m \geq 2$, the system having:

a) a means for sending the bets B_1, ..., B_m from the investors;

b) a betting exchange unit for initiating a first betting cycle and receiving the bets B_1, ..., B_m from the investors during the first betting cycle, the bets B_1, ..., B_m accumulating to an initial bet total B_{tot}, the betting exchange unit further comprising:

i) a computing unit for issuing equal numbers OS(1), ..., OS(m) of outcome shares such that OS(1)=...=OS(m), the outcome shares corresponding to the potential outcomes O_1, ..., O_m,, the computing unit assigning a share value SV to each of the outcome shares, the computing unit further assigning quote values Q_1, ..., Q_m to each of the outcome shares OS(1), ..., OS(m) such that $Q_1=(SV*B_1)/B_{tot}$, ..., $Q_m=(SV*B_m)/B_{tot}$; and

ii) a distributing unit for distributing the outcome shares to the investors.

18. The system of claim 17, wherein the computing unit further comprises an interface for receiving an actual outcome OA of the future event, the computing unit selecting from among the outcome shares winning shares WS corresponding to the actual outcome OA and assigning a normalized share value SV to each of the winning shares WS.

19. The system of claim 18, further comprising a data acquisition unit for monitoring the actual outcome OA, the data acquisition unit being connected to the interface.

20. The system of claim 17, wherein the investors comprise real investors and artificial investors.

21. The system of claim 17, wherein the means for sending the bets B_1, ..., B_m comprises a communication network.

22. The system of claim 17, wherein the betting exchange unit is programmed to initialize a subsequent betting cycle for receiving subsequent bets B_1, ..., B_m from the investors on each of the potential outcomes O_1, ..., O_m during the subsequent betting cycle and for receiving shares IS(1), ..., IS(m) from the investors during the subsequent betting cycle, and the computing unit is programmed to re-assign the quote values Q_1, ..., Q_m to preserve an equal number of outstanding shares in outcomes O_1....O_m such that

$$OS(1)-IS(1)=...=OS(m)-IS(m).$$

23. The system of claim 22, wherein the computing unit further comprises an interface for receiving an actual outcome OA of the future event, the computing unit selecting from among the outcome shares winning shares WS corresponding to the actual outcome OA and assigning a normalized share value SV to each of the winning shares WS.

24. The system of claim 23, further comprising a data acquisition unit for monitoring the

actual outcome ~~OA, the~~ data acquisition unit being connected to the ~~interface~~

APPENDIX

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5            BETTING EXCHANGE MACHINE CODE (PowerBasic 3.5)
                        ©1995 Dimitri P. M. Speck
     DEFQUD N,I,G                                          'long
     DEFEXT E,K,X,S                                            'exact
     DIM IM(100),IS(100), KiZ(100),N(100),Kurs(100)            'up to 100
10                                                             'events
                                                               dimensioned

                                                    'INPUT
     Z=5               'Number of events
15   IM(1)=1500        'IncomingMoney: Sum, that is invented during
     IM(2)=20000       'one period for event 1,2,3…
     IM(3)=25000
     IM(4)=50000       'IM() should be always >0 in this code
     IM(5)=80000       '(or else many exceptions would be necessary)
20
     IS(1)=1000        'IncomingShares: Number of all shares, which
     IS(2)=80000       'withdrawing participants return to the machine
     IS(3)=10000       'during 1 period for event 1,2,3…
     IS(4)=20000
25   IS(5)=45000

                                                    'TECHNICAL PARAMETERS
     S=10000           'Factor of startsteps
     Weight=.2         'Weight for selection-process. The selection-
30                     'process selects automatically an event (what
                       'in the script is specified as event 1)
     Force=0           '0=automatic selection
                       'other numbers=manual selection (ignores
                       'automatic selection process)
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35    Srd=4             'Stepreducing each change of direction
      Exact=0.000000001    'Exactness


      'Script:           IM(1)*IS(1)    IM(2)*IS(2)
40    'IS(1)+IM(1)+...- ---------- - ---- ------------ - ...- OS(1)=0
      '                   OS(1)    OS(1)-IS(1)+IS(2)

      'Code            KiZ(Choice)          KiZ()
      '    Sum&&   -   -----------  -      -----     - ...- X = Ergn
45    '                X+N(Choice)          X+N()

      Choice=0:IS(0)=10^18:FOR i=1 TO Z        'SELECTION PROCESS
            IF IM(i)-IS(i)*Weight>IM(choice)-IS(Choice)*Weight
            THEN Choice=i
50    NEXT:IF NOT Force=0 THEN Choice=Force

            'PUTTING TOGETHER THE CONSTANTS OF THE BETTING EXCHANGE
            'MACHINE POLYNOMIAL

55    Sum&&=IS(Choice)                        'Script: IS(1)
      FOR i=1 TO Z:Sum&&=Sum&&+IM(I):NEXT       'Script: IS(1)+
                                                'IM(1)+IM(2)+IM(3)+...
      FOR i=1 TO Z:KiZ(I)=IM(I)*IS(I):NEXT      'Script: IM(i)*IS(i)
                                                '(numerator)
60    FOR i=1 TO Z:N(I)=-IS(Choice)+IS(I):NEXT  'Script:-IS(1)+IS(i)
                                                 '(part of the
                                                 'denominator)


      ON ERROR GOTO Zerodivision
65    Stepiz=IM(Choice)/s                     'Startvalue of the stepsize
      X=IM(Choice)-(4*stepsiz)          'Startvalue of X
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'FINDING THE SOLUTION OF THE BETTING EXCHANGE MACHINE
'POLYNOMIAL
Restart:
                                        'Initialization
FOR i=1 TO Z:Ergn=Ergn-KiZ(i)/(X+N(i)):NEXT:Ergn=Ergn+Sum&&-X

Verf:                                   'Loop to right side (up)
DO                                      'tries to find zero
 Stp=stepsiz
 X=X+Stp:Ergv=Ergn:Ergn=0
 FOR i=1 TO Z:Ergn=Ergn-KiZ(i)/(X+N(i)):NEXT:Ergn=Ergn+Sum&&-X
 IF Ergv=Ergn THEN GOTO Outputting   'if identical (zero or
                                        'extremum)
 IF ign=0 THEN
    IF NOT SGN(Ergv)=SGN(Ergn) THEN EXIT LOOP  'changed sign?
 END IF
 IF Ergn>Ergv THEN rtg=1 ELSE rtg=2  '1=direction up, 2=down
 IF rtg+rtgv=3 THEN EXIT LOOP        'Changed direction?
                                        '(extremum at zero?)
 rtgv=rtg
 IF ign=1 Then rtg=0:rtgv=0:ign=0    'Don't ignore
LOOP
Stepsiz=stepsiz/Srd:rtgv=0           'step smaller

DO                                      'Loop to left side (down)
 Stp=Stepsiz
 X=X-Stp:Ergv=Ergn:Ergn=0
 FOR i=1 TO Z:Ergn=Ergn-KiZ(i)/(X+N(i)):NEXT:Ergn=Ergn+Sum&&-X
 IF Ergv=Ergn THEN GOTO Outputting
 IF NOT SGN(Ergv)=SGN(Ergn) THEN EXIT LOOP
 IF Ergn > Ergv THEN rtg=2 ELSE rtg=1
 IF rtgv+rtg=3 THEN EXIT LOOP
 rtgv=rtg
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```
        LOOP
105     Stepsiz=Stepsiz/Srd:rtgv=0
        GOTO Verf

        Outputting:
                                                    'QUOTES
110     FOR i=1 TO Z:Kurs(i)=IM(i)/(X-IS(Choice)+IS(i)):next

        Sumk=0                                      'WRONG ROOT?
        FOR i=1 TO Z:Sumk=Kurs(i)+Sumk:NEXT         'Sum of all quotes
          ign=1:rtg=0:rtgv=0:Stepsiz=IM(Choice)/s
115     IF ABS(Sumk-1)>Exact THEN GOTO Verf         'Sum is not equal 1:
                                                    'try next root
        FOR i=1 TO Z
          IF Kurs(i)<(0-Exact) THEN GOTO verf       'Negative quote: try
                                                    'next root
120     NEXT
                                                    'OUTPUT (quotes)
        FOR i=1 TO Z:PRINT "Kurs(";I;")=";USING"#.#######";
                                                    Kurs(i):NEXT:END

125     zerodivision:                       'Handling of 'division by zero'
          X=X+Exact:Stepsiz=IM(Choice)/s:Ergn=0      'Restart further
                                                     'right
          rtg=0:rtgv=0:ign=0
        RESUME RESTART
130
```